

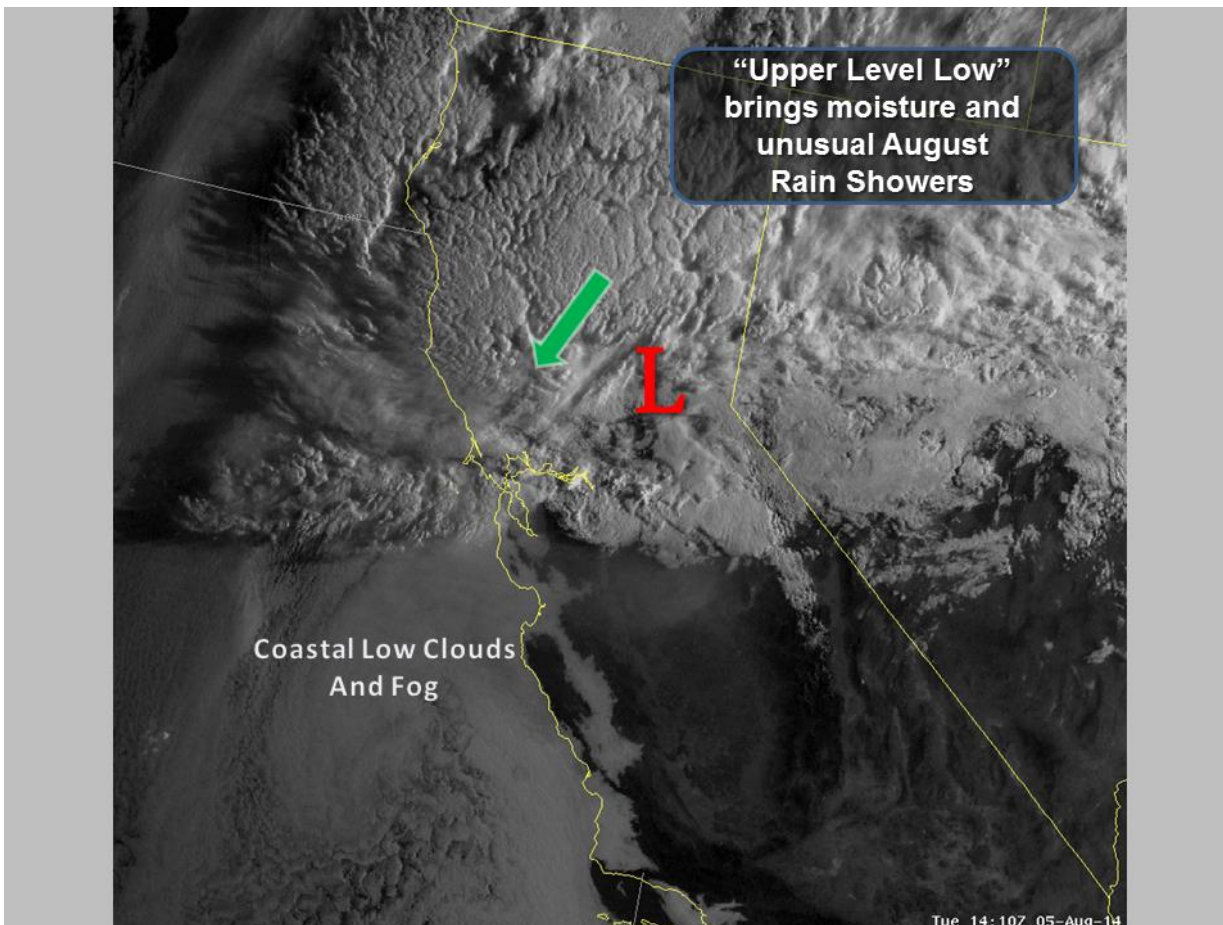
## August 2014 Regional Climate Summary

### For the San Francisco Bay Area and Monterey Bay Area

For the most part, **August 2014** was an uneventful month. There were no thunderstorms or oppressive heat events. In fact, daytime temperatures were within a few degrees of normal on most days. There were, however, a few noteworthy weather items from August. Light rain fell across portions of the North and East Bay early in the month as subtropical moisture surged northward across California. Also, continued warmer than normal sea surface temperatures along the California coast resulted in much above normal nighttime temperatures, especially in coastal areas. **Average overnight lows were the warmest on record for the month of August at several climate stations.**

#### August Precipitation

Although subtropical moisture spread across the region on several occasions during July, only one subtropical moisture influx event occurred in August. A deep subtropical moisture plume, which produced a 500-year rain event and flash flooding in the San Gabriel Mountains of Southern California on the afternoon of August 3, was drawn northward by a weak area of low pressure on August 4. This subtropical moisture mostly made its way across the North and East Bay late on Monday the 4<sup>th</sup> and light rain began to fall late that evening in Pittsburg and also in the Napa Valley. Periods of light rain continued across portions of the North and East Bay through Monday night and into the morning commute hours of Tuesday August 5. Rainfall with this event totaled only a tenth of an inch or less, including 0.07 inches at both the Napa and Concord Airports. This was the first measurable August rain event at both of these locations since 2003.



**Visible satellite image from 7:10 am on Tuesday August 5, showing widespread cloudiness across northern California associated with subtropical moisture and a weak area of low pressure. Light rain showers were being reported across portions of the North and East Bay at this time.**

Widely scattered light precipitation continued through the night of August 5 and light showers advanced as far south as the Monterey Bay Area by the morning of August 6. However, by this time the shower activity was generating only sprinkles and no additional measurable rainfall.

The only other precipitation during August came in the form of drizzle from a deep marine layer on August 10 and again on August 18. The majority of climate stations ended the month with no measurable precipitation. However, the August 5<sup>th</sup> light rain event resulted in some North and East Bay climate stations picking up more than double their normal August rainfall.

#### August Regional Precipitation Summary:

Location	August Rainfall	Normal Aug Rainfall	Percent of Normal
<b>North Bay</b>			
Angwin	0.01	0.06	17
Calistoga	0.08	0.05	160
Kentfield	0.00	0.06	0
Muir Woods	0.00	0.14	0
Napa	0.05	0.09	56
Napa Airport	0.07	0.03	233
Occidental	0.15	0.16	94
Petaluma	0.05	0.06	83
San Rafael	0.00	0.05	0
Sonoma County Airport	0.00	0.08	0
<b>San Francisco Peninsula</b>			
Half Moon Bay	0.11	0.22	50
Redwood City	0.00	0.05	0
San Francisco Airport	0.00	0.04	0
San Francisco Downtown	0.01	0.06	17
<b>East Bay</b>			
Concord	0.07	0.03	233
Concord Airport	0.09	0.02	450
Fremont	0.00	0.04	0
Hayward Airport	0.00	0.04	0
Livermore	0.00	0.05	0
Livermore Airport	0.00	0.01	0
Martinez	0.11	0.05	220
Mount Diablo Junction	0.01	0.04	25
Newark	0.00	0.03	0
Oakland	0.00	0.06	0
Oakland Airport	0.00	0.05	0
Richmond	0.00	0.06	0
<b>South Bay &amp; Santa Cruz County</b>			
Ben Lomond	0.00	0.06	0
Gilroy	0.00	0.03	0
Los Gatos	0.00	0.03	0
Moffett Federal Airfield	0.00	0.01	0
San Jose	0.00	0.02	0
Santa Cruz	0.00	0.04	0
Watsonville	0.01	0.02	50
Watsonville Airport	0.00	0.05	0

<b>Monterey and San Benito Counties</b>			
Carmel Valley	0.00	0.03	0
Hollister	0.00	0.01	0
King City	0.00	0.01	0
Monterey	0.00	0.07	0
Monterey Airport	0.04	0.04	100
Pinnacles National Park	0.00	0.04	0
Salinas	0.00	0.04	0
Salinas Airport	0.00	0.03	0

### **August Temperatures and Warm Coastal Waters**

Daytime temperatures during August did not vary all that much and were within about five degrees of normal on most days. There were no heat waves or periods of much below normal temperatures. Daily high temperatures in Downtown San Francisco mostly held in a narrow range between 65 and 70 degrees F and varied only by 11 degrees during the entire month (from 60 to 71). Similarly, San Jose only saw a 12 degree F spread between its coolest and warmest day in August (from 74 to 86). Average high temperatures during the month were within a few degrees of normal (plus or minus) at most climate stations. No daily high temperature records were set in August.

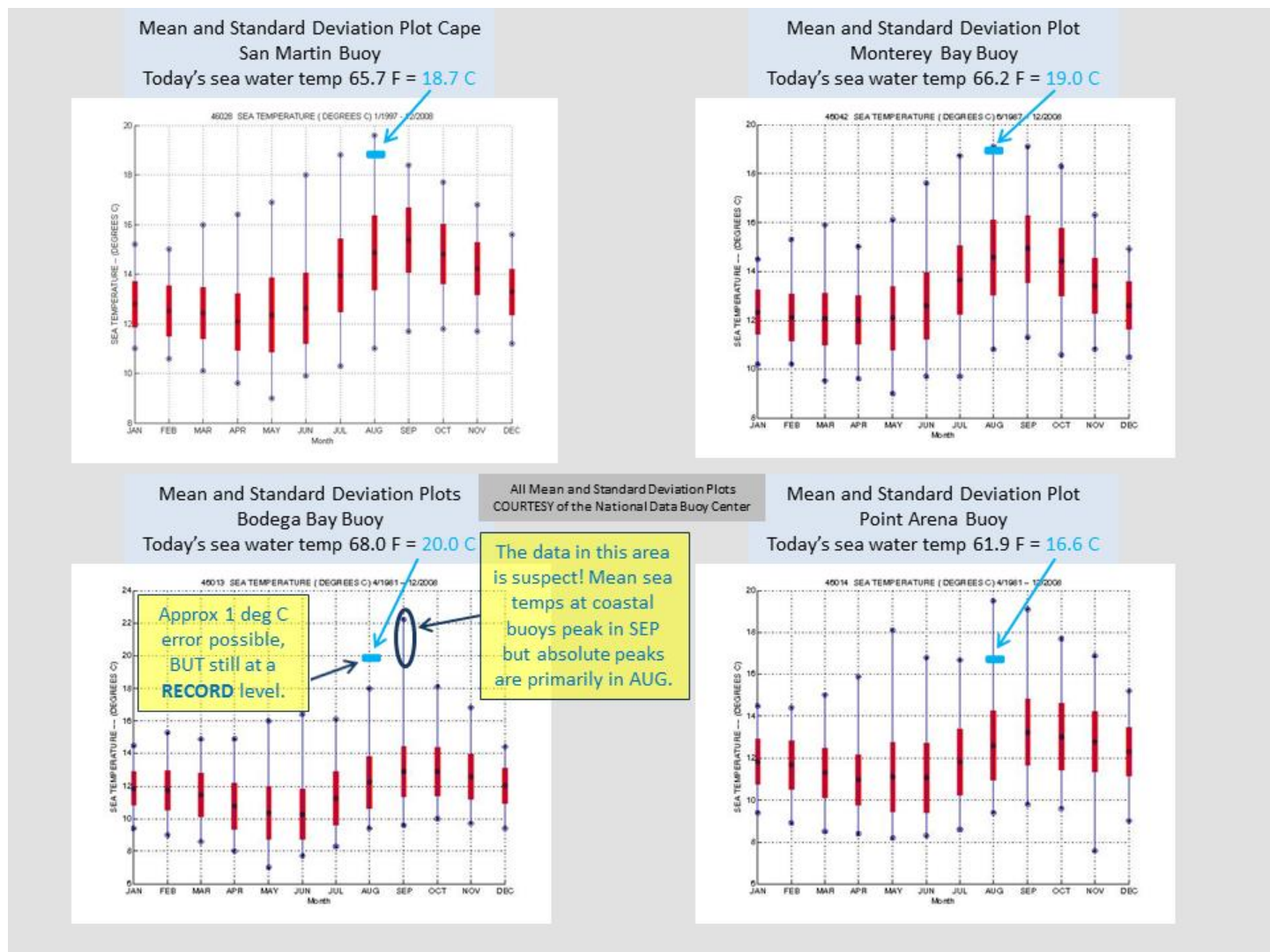
Average overnight lows during August were almost universally above normal, and significantly above normal at coastal climate stations. Warmer than normal nights were due primarily to much above normal sea surface temperatures (SSTs) along the California coast, a phenomena that began in July and continued through August. By the end of August, the water temperature at the Monterey Bay buoy had been above 60 degrees F for 44 consecutive days (since July 16) and peaked at 68 degrees F on July 23 and then at 66 degrees F on August 26. The normal water temperature at the Monterey Bay buoy in August is 58 degrees. It should be noted that above normal SSTs along the California coast this summer has mostly been due to reduced upwelling in our coastal waters, and is not part of the warming in the equatorial Pacific that is associated with the possible development of an El Niño.

Average August overnight lows at coastal climate stations were 3 to 6 degrees above normal. Inland areas also experienced warmer than normal overnight lows in August, but their departures from normal were generally of a smaller magnitude. Average overnight lows for August 2014 were the warmest on record at ten climate stations across the region.

<b>Location</b>	<b>August '14 Average Low Temperature</b>	<b>Normal August Low</b>	<b>Departure from Normal</b>	<b>Previous August record warm low temp and year</b>
Calistoga	56.3	52.1	+4.2	55.6 in 1990
Half Moon Bay	57.4	52.3	+5.1	56.8 in 1997
King City	56.5	53.0	+3.5	55.3 in 1997
Monterey	56.3	53.1	+3.2	56.2 in 1997
Petaluma Airport	56.4	52.6	+3.8	55.7 in 1997
Redwood City	58.8	55.8	+3.0	58.5 in 1958
San Francisco Downtown	58.2	55.1	+3.1	58.1 in 1990
San Francisco Airport	60.0	56.3	+3.7	59.8 in 1997
Santa Cruz	58.8	54.3	+4.5	56.7 in 2003
Watsonville	59.3	54.1	+5.2	57.3 in 1993

In addition, two other climate stations, Oakland Airport and Salinas Airport, had their second warmest average August low temperature ever recorded.

Coastal buoys reported their warmest temperatures of the month on August 26. On that day, Bodega Bay Buoy reported a water temperature of 68 degrees, the highest ever recorded by that buoy (records for this buoy go back to 1981). The normal water temperature at Bodega Bay Buoy in late August is only 54 degrees F.



**Plots showing mean water temperature as well as standard deviation at four buoys along the northern and central California Coast. The blue line represents the water temperature reached on August 26, 2014**

### August Regional Temperature Summary

Location	Average High	Normal High	Departure from Normal	Average Low	Normal Low	Departure from Normal
<b>North Bay</b>						
Angwin	83.4	85.5	-2.1	53.5	54.3	-0.8
Calistoga	86.3	90.7	-4.4	56.3	52.1	4.2
Kentfield	81.9	82.3	-0.4	55.2	53.1	2.1
Napa	82.1	83.0	-0.9	56.9	55.0	1.9
Napa Airport	77.1	79.6	-2.5	54.5	52.0	2.5
Petaluma Airport	80.2	81.9	-1.7	56.4	52.6	3.8
San Rafael	81.3	79.7	1.6	56.8	55.2	1.6
Sonoma County Airport	80.8	83.3	-2.5	54.8	51.1	3.7



<b>San Francisco Peninsula</b>						
Half Moon Bay	69.0	66.1	2.9	57.4	52.3	5.1
Redwood City	81.6	81.4	0.2	58.8	55.8	3.0
San Francisco Airport	74.0	72.7	1.3	60.0	56.3	3.7
San Francisco Downtown	67.6	68.1	-0.5	58.2	55.1	3.1
<b>East Bay</b>						
Concord	86.6	87.3	-0.7	60.1	58.5	1.6
Concord Airport	85.8	87.2	-1.4	58.9	57.5	1.4
Fremont	78.2	79.0	-0.8	59.0	56.8	2.2
Hayward Airport	77.4	75.3	2.1	61.2	57.7	3.5
Livermore	89.2	88.4	0.8	58.0	56.7	1.3
Livermore Airport	87.8	87.3	0.5	59.1	57.4	1.7
Martinez	85.1	87.9	-2.8	49.5	51.2	-1.7
Mount Diablo Junction	81.2	84.7	-3.5	60.7	59.7	1.0
Newark	76.6	77.4	-0.8	59.6	58.4	1.2
Oakland	73.3	73.0	0.3	59.3	57.5	1.8
Oakland Airport	73.2	72.4	0.8	60.2	55.7	4.5
Richmond	71.3	72.0	-0.7	58.4	56.0	2.4
<b>South Bay and Santa Cruz County</b>						
Gilroy	88.4	87.8	0.6	56.8	54.6	2.2
Los Gatos	85.5	84.1	1.4	57.1	55.2	1.9
Moffett Federal Airfield	76.9	77.3	-0.4	60.8	59.2	1.6
San Jose	79.6	81.9	-2.3	59.5	58.3	1.2
Santa Cruz	76.9	76.2	0.7	58.8	54.3	4.5
Watsonville	72.5	72.3	0.2	59.3	54.1	5.2
Watsonville Airport	74.6	74.3	0.3	59.8	53.3	6.5
<b>Monterey and San Benito Counties</b>						
Carmel Valley	79.6	79.8	-0.2	52.5	50.1	2.4
Hollister	79.7	82.0	-2.3	55.7	53.6	2.1
King City	85.3	85.7	-0.4	56.5	53.0	3.5
Monterey	68.5	67.6	0.9	56.3	53.1	3.2
Monterey Airport	69.9	68.9	1.0	57.5	54.2	3.3
Pinnacles National Park	94.4	94.9	-0.5	50.7	50.2	0.5
Salinas	73.6	72.5	1.1	57.9	54.0	3.9
Salinas Airport	72.8	72.1	0.7	59.0	55.7	3.3

Daily Temperature Records for August 2014			
Date	Location	Record warm Min Temp	Previous Record and Year
8/20	San Francisco Downtown	60	60 in 1983
8/25	San Francisco Downtown	61	61 in 1997

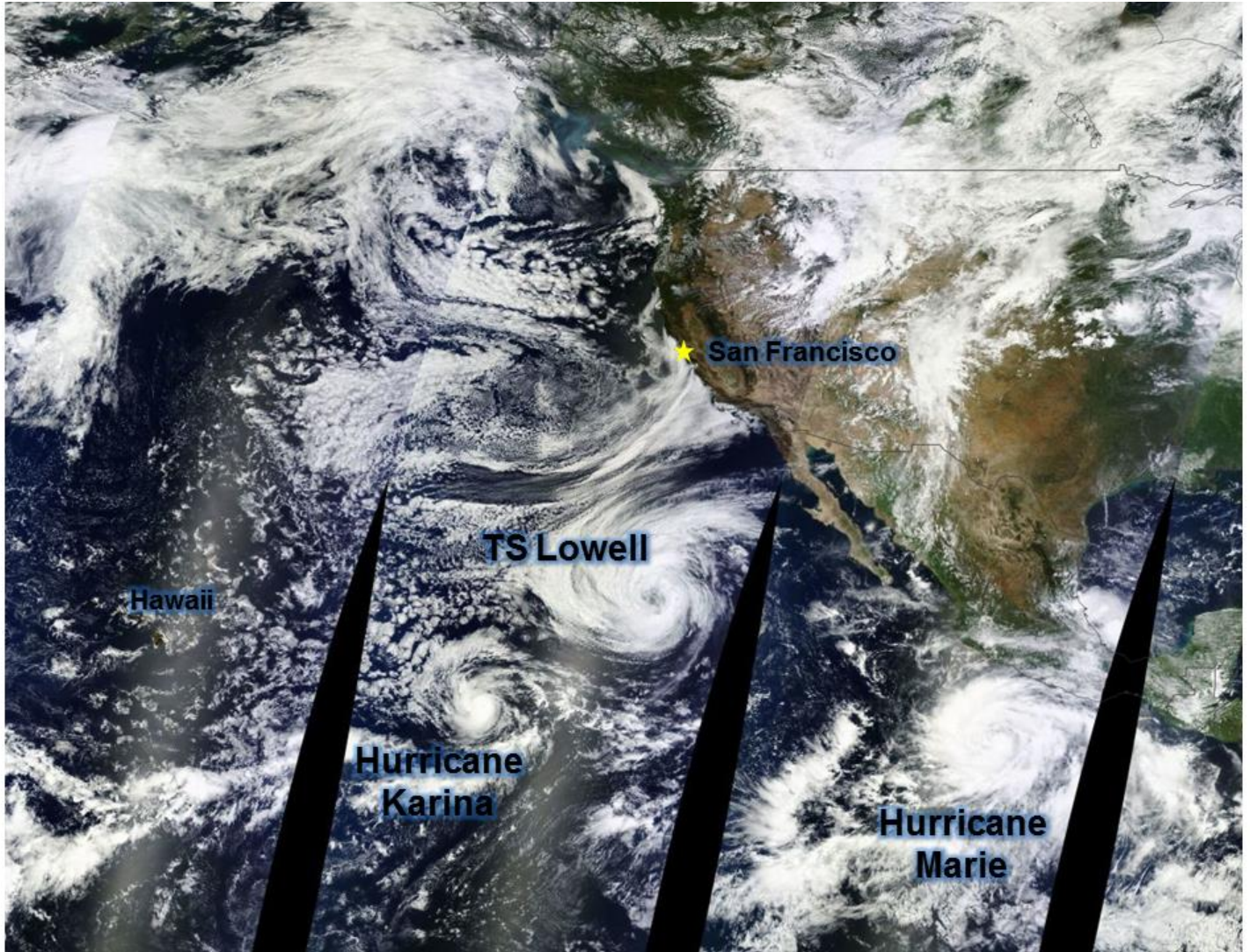
### Miscellaneous August Climate Information

Monthly Ranks for Downtown San Francisco		
Average High Temperature	67.6 deg	36 <sup>th</sup> warmest August out of 140 years
Average Low Temperature	58.2 deg	<b>Warmest August</b> out of 140 years
Average Temperature	62.9 deg	15 <sup>th</sup> warmest August out of 140 years
Precipitation	0.01 in	51 <sup>st</sup> wettest August out of 165 years

Monthly Extremes for Select Locations			
Location	Max Temp: Warmest Day(s)	Min Temp: Coolest Day(s)	Precipitation: Wettest Day(s)
Sonoma County Airport	8/30	8/08, 8/09	n/a
	96 degrees	50 degrees	
San Francisco	8/06, 8/30, 8/31	8/02, 8/09, 8/17	8/06
	71 degrees	56 degrees	0.01 inches
Livermore Airport	8/01	8/17, 8/26	n/a
	102 degrees	56 degrees	
San Jose	8/30	8/26	n/a
	86 degrees	56 degrees	
Salinas Airport	8/27	8/27	n/a
	83 degrees	54 degrees	

## Eastern Pacific Tropical Cyclone Activity

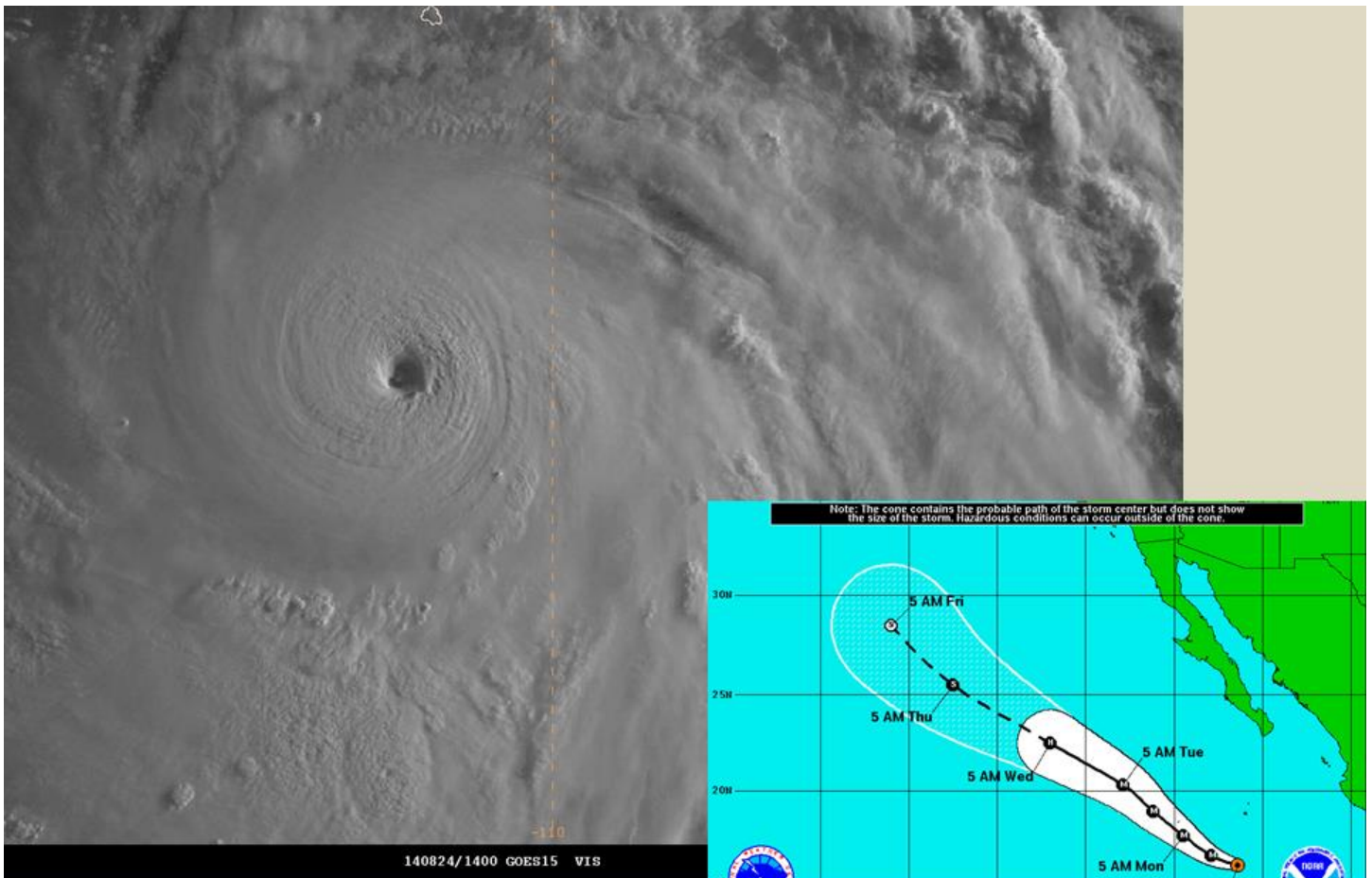
Tropical cyclone activity over the Eastern Pacific peaked in late August. On August 22<sup>nd</sup> there were three named storms churning in the Eastern Pacific.



***August 22<sup>nd</sup> visible satellite imagery, showing three named tropical cyclones across the Eastern Pacific: Tropical Storm Lowell, Hurricane Karina, and Hurricane Marie.***

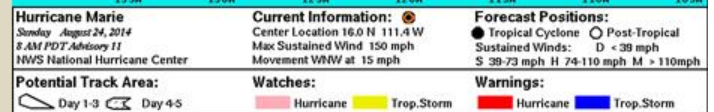
Hurricane Marie went on to become a major hurricane with maximum winds of 160 mph. None of these hurricanes had any significant impact on the San Francisco Bay Area or Monterey Bay Area. However, large and dangerous swell produced by Hurricane Marie impacted coastal areas as far north as Southern California on August 26. High clouds from Marie drifted as far north as the San Francisco Bay Area on Friday, August 29.





Above: GOES 1400 UTC 08/24/14 visible satellite image of Category 4 (Major) Hurricane Marie in the E Pacific

Right: Forecast for Hurricane Marie from NHC's 8 AM PDT advisory



**August 24 visible satellite image of Hurricane Marie when it was a category 4 hurricane.**



## Looking Ahead...

### Average first day with rainfall of at least...

	$\frac{1}{10}$ "	$\frac{1}{4}$ "	$\frac{1}{2}$ "	1"
Santa Rosa	September 30	October 11	October 23	November 10
Napa	September 30	October 13	October 22	November 21
Santa Cruz	September 30	October 14	October 28	November 18
Berkeley	October 2	October 14	October 27	November 28
Monterey	October 3	October 16	November 5	December 14
San Francisco	October 4	October 18	November 1	November 29
San Jose	October 8	October 23	November 11	December 26*

*\*San Jose does not always experience a day during the rain season with at least 1 inch measured. In nearly 25% of the years since 1893 – no day with rain over 1 inch was recorded in San Jose.*

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*Table showing average first day of rainfall of various amounts at select climate stations across the region.*

Note: Climatological data included in this document is preliminary. For official certified climatological data please contact the National Climatic Data Center at 828-271-4800 or <http://www.ncdc.noaa.gov>.

Official values as determined at the above web site may take several months for authentication and publication.